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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/759,012

01/20/2004

Shinji Hirano

118237

6830

25944

7590

03/22/2007

OLIFF & BERRIDGE, PLC  
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ALEXANDRIA, VA 22320

EXAMINER

WILLIAMS, JOSEPH L

ART UNIT

PAPER NUMBER

2879

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/22/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

**Application No.**

10/759,012

**Applicant(s)**

HIRANO, SHINJI

**Examiner**

Joseph L. Williams

**Art Unit**

2879

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Lowery et al. (US 5,205,770).

Regarding claim 1, Lowery ('770) teaches in figures 1-4 and the corresponding text, a method of manufacturing a display device comprising: forming a plurality of columnar spacers (18'), having heads, on a surface of a substrate (16); forming a coating material film (mold 19), having a flat upper surface, on the surface of the substrate on which the plurality of columnar spacers are formed so that the heads of the columnar spacers protrude from the flat upper surface of the coating material film; and polishing the protruded heads of the columnar spacers using the flat upper surface of the coating material film as a reference, until top faces of the columnar spacers are flush with the flat upper surface of the coating material film (see column 4, lines55-58).

Regarding claim 2, Lowery ('770) teaches the plurality of columnar spacers are formed on the surface of the substrate on which a plurality of pixel electrodes (read anode plate 16) are present.

Regarding claim 3, Lowery ('770) teaches the forming the plurality of columnar spacers includes forming the columnar spacers at quadruple points between pixel electrodes.

Regarding claim 4, Lowery ('770) teaches the forming the coating material film includes forming grooves (no number, but see figure 2 where the spacer material is to be poured), which are shallower than the thickness of the coating material film, at peripheries of the heads of the plurality of the columnar spacers and in regions connecting the peripheries together.

Regarding claim 5, Lowery ('770) teaches the polishing the protruded heads of the columnar spacers includes chemical mechanical polishing.

Regarding claim 8, Lowery ('770) teaches the columnar spacers are made of one of silicon nitride and silicon oxynitride.

Regarding claim 9, Lowery ('770) teaches a method of manufacturing a display device, comprising: preparing a matrix substrate, the preparing the matrix substrate comprising: forming a plurality of columnar spacers, having heads (18'), on a surface of a substrate (16) on which a plurality of pixel electrodes (read anode plate) are present; forming a coating material film (19), having a flat upper surface, on the surface of the substrate on which the plurality of columnar spacers are formed, so that the heads of the columnar spacers protrude from the flat upper surface of the coating material film;

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and polishing the protruded heads of the columnar spacers using the surface of the coating material film as a reference until top faces of the columnar spacers are flush with the flat upper surface of the coating material film; and bonding the matrix substrate having the plurality of columnar spacers with the polished top faces to an opposing substrate such that a gap between the substrates is maintained by the columnar spacers.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowery et al. (US 5,205,770), of record, in view of Takahashi et al. (US 5,336,585).

Regarding claim 6, Lowery ('770) discloses all of the claimed limitations except for the coating material is photosensitive, and the grooves are formed by selectively exposing the surface of the coating material film to light.

Further regarding claim 6, Takahashi ('585) teaches in figure 1 and the corresponding text a method of making spacers for a display device comprised of, in part, the coating material is photosensitive, and the grooves are formed by selectively

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exposing the surface of the coating material film to light for the purpose of improving the durability of the spacers.

Hence, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the photosensitive material and exposure method of Takahashi to make the spacers of Lowery for the purpose of improving the durability of the spacers.

Regarding claim 7, Lowery ('770) teaches the spacers are made of an inorganic insulating material while Takahashi ('858) teaches the coating material is made of an organic material.

The reason for combining is the same as for claim 6 above.

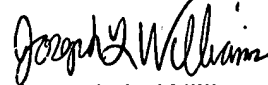
### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph L. Williams whose telephone number is (571) 272-2465. The examiner can normally be reached on M-F (6:30 AM-3:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Joseph L. Williams  
Primary Examiner  
Art Unit 2879